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ABSTRACT

Results of several evaluation studies of career education are summarized in this monograph including the results reported in four papers prepared for the Office of Career Education and of several unsolicited reports. Evaluation data is assessed in the specific areas of career awareness, career decisionmaking, and academic achievement. Other ways to determine program effectiveness are also examined. The author discusses the definition of the term career awareness, and a table presents a summary of 16 studies related to either career awareness or self-awareness. A review of six studies indicates a positive relationship between career education and the development of career decisionmaking skills. The author cites 12 studies on the relationship between career education and academic achievement or the acquisition of basic skills. Under "Other Ways of Assessing Effectiveness," nine studies on the attitudes of teachers, students, and volunteers toward career education are examined. Several tables appear in the body of the report. Twelve of the 31 pages are devoted to a bibliography. (LMS)

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MONOGRAPHS ON CAREER EDUCATION

A Review of Career Education Evaluation Studies

by
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A REVIEW OF CAREER EDUCATION EVALUATION STUDIES

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Introduction

Last year, the Office of Career Education conducted two mini-conferences on the evaluation of career education programs and efforts. The deliberations of the practitioners and consultants who attended the conferences made it quite clear that evidence attesting to career education's effectiveness is still greatly needed. This monograph, then, is an attempt to summarize the results of several existing evaluation studies. The evaluation data will be assessed in the specific areas of career awareness, career decision-making, and academic achievement, and in the general category of other ways to determine program effectiveness. In addition, the monograph will try to provide baseline data—that information necessary to determine where we are, at this point in time, in terms of evaluating the career education concept.

Though the first round of 80 grants funded by the Office of Career Education were completed on June 30, 1976, their final reports are not due until September 30, 1976, and it will not be possible to include them in this review. However, a grant has been awarded to the firm of New Educational Directions to develop, by June 30, 1977, a comprehensive summary of these 80 projects.

In addition, a contract has been let to the National Testing Service of Durham, North Carolina to provide technical assistance to 15 sites selected from all K-12 projects funded by the Office during Fiscal Year 1976. Along with upgrading existing local evaluation efforts, the Service will develop a common evaluation model for career education activities. A report summarizing the evaluation efforts of these 15 sites, using a pre-test/post-test evaluation design, will be completed and available in September, 1977.

The monograph, then includes results reported in four papers prepared for the Office of Career Education in the fall of 1976 which reviewed career education activities to that point in time. In addition, it includes the results of several unsolicited reports forwarded to the Office of Career Education by practitioners from all over the United States.

Career Awareness

Career awareness has been conceptualized and defined from a variety of perspectives. Datta (1975) reports that theories of career development can be categorized into economic, psychological and sociological domains. Just as theories of career development can be categorized on these domains, so also can definitions of career awareness.

From an economic perspective, the Curriculum Development Center at the University of Kentucky (Verhoven & Vinton, 1972) defines career awareness as "a total knowledge of the spectrum of careers." Herr's discussion of career awareness (1972) is illustrative of those which are psychologically based and indicates that students need clarification of those aspects of self (e.g., interests, capabilities, values) to engage in the lifelong process of planning and decision-making. From a sociological perspective, Leifer & Lesser (1975), while not specifically defining career awareness, theorize that students rarely match the demands of various types of work with their personal skills and interests and suggest that, in order to be effective, a career education program should include the elements of influence (parental, peer and school), occupational models, the availability of training opportunities, and a discussion of the rate and direction of social mobility.

The abovementioned definitions do not constitute an exhaustive list of the definitions of career awareness which are available to the reader. Rather, they are illustrative of the variety of definitions which are available. Although the conceptualization of career awareness varies due to the perspective of the author, the majority of the definitions contain two common elements: (1) the various aspects of the world of work, and/or (2) self-knowledge of the attitudes, values and interests of the student as they relate to the world of work. Hoyt and others (1974) address the importance of career awareness and provide a good summary definition in their statement:

> The components of career education most needed will emphasize helping students acquire positive attitudes toward work, toward all levels of occupations found in the society, and toward themselves as prospective workers.

A variety of techniques have been used by various researchers in their attempts to measure the effects of career education upon career awareness. Table 1 presents a summary of the studies which relate to either career awareness or self-awareness. In 1974, Tuckman and Carducci conducted a comprehensive review of 13 career education evaluation studies.

More detailed information on the studies summarized in Table 1 can be found by referring directly to the Tuckman and Carducci report. Summary statements reported in project findings at each of the 13 sites attest to the positive effects that career education has had upon attitudes toward work, occupational information, career maturity, and self-concept.

Similar findings were reported by other researchers. The Pontiac Vocational Career Development Program (Ploughman, 1975) reported that elementary students who were enrolled in the program (1) showed significant gain in their level of occupational knowledge, and (2) selected occupations of higher rank when compared with selections made at program initiation. The Prince George's County Schools in Maryland (1975) evaluated their career education program and addressed the concept of career awareness through the question: "Do pupils

TABLE 1

STUDIES REVIEWED BY TUCKMAN AND CARDUCCI RELEVANT TO CAREER AWARENESS AND SELF AWARENESS

Author and Site of Study	Grade Level	Instrument	Analysis	Findings
Cochran and Weis (1972) Dayton, Ohio	9-10	Ohio Vocational Interest Survey	Analysis of covariance	". . .students from the vocational school were better informed about career choice. . ."
Holstein (1972) Lincoln Co., West Virginia	1-6	Homemade test of Occupational awareness	Analysis of covariance	". . .career education students outperformed control students on all measures."
Ovard (1973) Utah	6	Not specified	Chi square	". . .students showed favorable change in attitude toward work. . ."
Sims (1973) Cleveland, Ohio	5-6	Job information questionnaire	Analysis of variance	". . .treatment schools students had acquired more job information than the control."
McNulty (1974) Massachusetts	11-12	Career Maturity Inventory	Analysis of covariance	". . .positive correlation between scores for all students. . ."
Warren (1974) Kansas	6-8	Career Maturity Inventory	t-test	". . .significant differences in mean scores in favor of treatment group."
Bariolo (1972) Alameda Co., Calif.	Elem.	Occupational Information Survey	t-test	". . .yielded greater gains for treatment students than for controls at elementary level."

Cunningham (1973) New Britain, Conn.	Elem.	How I See Myself Scales	t-test	". . .showed significant differences between the control and experimental groups."
Dennard (1973) Clayton Co., Ga.	4	Student Knowledge of Careers	not specified	". . .fourth graders in program had greater knowledge of career than those not in program."
Holden (1973) South Carolina	Elem.	A battery of cognitive and affective instruments	not specified	"Kershaw and Chesterfield counties were fairly successful in efforts to teach elementary school students about careers."
Peck (1973) District of Columbia	K-9	Self Observation Scale	not specified	". . .showed CDEP children to have better self-concept than controls."
"	"	Work Attitude Survey	not specified	". . .revealed CDEP students had more positive attitudes toward work than controls."
"	7-9	Occupational Values Inventory	not specified	". . .students were realistic in their career planning."
"	6-9	Career Awareness Development Inventory	not specified	". . .students were able to relate school-learned skills to work situations at reasonable level of proficiency."
Young (1971) New Orleans	1-8	Attitude Toward Work Inventory	t-test	"A significant positive gain was found for students in grades 1-8."
Harmond (1973) Harrington, Maine	7	Occupational Knowledge Test	t-test	". . .significant gain in mean scores of seventh grade students."

involved in career education acquire more knowledge about the world of work than those who are not?" The results of their study indicate that students in the treatment group (those receiving career education) scored significantly higher than students in the control group at grades 6, 7, 11, and 12.

The Career Based Curriculum Project in Monroe, North Carolina (Union County Board of Education, 1975) evaluated the goals of their elementary career education program. Two of these goals (to increase each child's self awareness, encouraging self concept; and to increase the pupil's awareness of the many occupations and job roles in the community) relate to career awareness. Findings relevant to Goal #1 indicate that students in Grade 3 scored significantly higher on the Self Observation Scale as a result of involvement in the project. On a self report technique related to Goal #2, students in grades 3 and 6 in the treatment group scored significantly higher than did those in the control group when asked to list "as many kinds of workers as you can."

Two studies were conducted in Kansas on the effectiveness of career education on career awareness at the elementary level. The Research and Development Project in Career Education in Wichita (Wichita Public Schools, 1975) tested the gains made by students at the K-2 and 3-6 levels as a result of their participation in the project. Students in grades K-2 exhibited significant gains in their career knowledge; students in grades 3-6 exhibited significant gains in their knowledge of vocational vocabulary and knowledge of working conditions and worker's earnings. The Unified School District No. 250 of Pittsburg (Kansas) utilized the Career Maturity Inventory and the Self Observation Scales to evaluate the effectiveness of their career education program. Two hundred students were randomly selected and constituted the experimental group; a parochial school with no career education program provided students for the control group. In general, students in the experimental group exceeded national norms and the mean percentile score of the control group on 12 of 18 measures at the grade three level and on 24 of 30 measures at the grade six level. Grade 9 students in the experimental group scored significantly higher than their control group on the Career Maturity Inventory, Part 2–Knowing About Jobs.

Project evaluators of the career guidance project in operation in the Pima, Arizona Schools (Pima County Developmental Career Guidance Project, 1975) presented the following findings relative to career awareness:

> Students exposed to career education demonstrated a greater awareness of the world of work. On every index designed to measure career-awareness, economic-awareness, and decision-making, the students with career education exposure scored higher. One of the most consistent findings in the data is that students with career education exposure are more knowledgeable about a variety of occupational clusters, representing the entire range of jobs. . .

> Students exposed to career education: (1) have knowledge of a wider range of occupations both between and within occupational categories, (2) have more ability to evaluate the skills needed in preparation for certain occupational choices, and (3) have more self-confidence that their goals are both realistic and achievable.

The project evaluators also reported on the students' self awareness:

> One of the most promising findings. . .is related to the area of self awareness. Students in the high career education group were more certain of attaining their educational and occupational aspirations, rated themselves favorable relative to other students in their grade level, and expected higher achievement for themselves compared to students in the low involvement group. Since there were no population differences in the two groups, these data demonstrate project efforts in the area of self awareness have had some success this year.

Development Associates, Inc. (1975) examined the effectiveness of career education projects funded under Part D of the Vocational Education Amendments *(Evaluation of Vocational Exemplary Projects, Part D, Vocational Education Act Amendments of 1968).* Eight outcome questions were used to summarize the findings of the 45 projects reviewed. Questions for which a "Yes" is entered in Table 2 indicate that there was an overall significant difference in favor of project participants for any of the criteria used to assess the question. Questions one through six relate, at least in part, to career awareness. Readers wishing detailed information on the projects reviewed or more specific findings are referred to the Development Associates evaluation report.

The South San Francisco Unified School District (1975) evaluated the effectiveness of their junior high school career education project in terms of mean percentage loss or gain when pre-test and post-test scores were compared. Using matched samples for the experimental and control groups, students were evaluated in three areas: self-assessment questions, occupational information questions, and school/college information questions. Students in the experimental group exhibited gains in all three areas at the three grade levels surveyed (7, 8 and 9). Students in the control group exhibited both gains and losses in the pre-test/post-test comparisons. No tests of statistical significance were reported.

The Cochise County (Arizona) Career Education Project (Behavioral Research Associates, 1975) provides data on the effectiveness of career education at both the elementary/intermediate and the secondary levels. Two comparison groups were utilized in the evaluation: one, a high exposure sample: the second, a low exposure sample. Career awareness at the elementary/intermediate level was explored in three questions; at the secondary level, in six questions. The results of the Cochise County evaluation are summarized in table 3. Utilizing the t-test, the statistical significance of the difference in group means was calculated and

TABLE 2

Summary of Conclusions for Outcome Questions Across All Projects by Student Group*

Outcome Questions \ Student Groups	6th Grade	9th Grade	12th Grade			
			Participating Teacher	Counseling Group	Work Experience	Skill Training
Are student participants able to identify a greater number of occupations than non-participants? (Q1)	Yes	Yes	Yes	Yes	No	No
Do students demonstrate more familiarity with tasks and functions associated with selected occupations than the comparison group? (Q2)	No	Yes	Yes	Yes	No	No
Are student participants more familiar with the requisitions associated with selected occupations than the comparison group? (Q3)	Yes	No	No	No	No	No
Do student participants score higher on pre-vocational, job readiness tests than the comparison group? (Q4)	Yes	No	No	No	No	No
Do student participants indicate more positive attitudes toward employment than non-participants? (Q5)	Yes	No	Yes	No	No	No
Is the variety of careers being considered by individual participating students greater than that of students in the comparison group? (Q6)	No	No	No	No	No	No
Do more student participants indicate having a career plan than the comparison group? (Q8)	–	No	Yes	No	No	No
Do more student participants cite their career preference as their expected career than non-participants? (Q10)	–	–	No	Yes	No	Yes

*The questions were answered "yes" if there was an overall significant difference in favor of participants for any of the criteria used to assess the question.

TABLE 3

COMPARISONS OF STUDENTS WITH HIGH AND LOW EXPOSURE TO CAREER EDUCATION ON SEVERAL DIMENSIONS RELATED TO THE ARIZONA CAREER EDUCATION MATRIX

	High Exposure Sample	Low Exposure Sample	t-test	Significance
	Secondary Students			
Educational Awareness	46.8	44.3	3.01	0.001
Knowledge of Skill Req.	54.5	49.6	2.40	0.01
Knowledge of Factors Contributing to Job Satisfaction	63.8	55.7	3.40	0.001
Common Threads in Jobs	68.2	57.0	4.64	0.001
Economic Awareness	53.1	48.5	1.83	0.04
Awareness of Career Mobility	40.9	34.0	2.78	0.003
Awareness of Factors Influencing Occup. Structure	53.2	47.7	2.27	0.002
Decision Making	35.3	30.2	2.94	0.001
Employability Skills	26.6	24.4	3.04	0.001
Appreciations and Attitudes	45.3	37.0	3.90	0.001
Knowledge of Career Clusters Score	34.2	30.8	1.85	0.04
Interest in Career Clusters Score	25.9	24.7	1.97	0.025
	Elementary/Intermediate Students			
Educational Awareness	50.1	48.5	1.86	0.05
Knowledge of Skill Req.	59.4	50.5	3.45	0.001
Knowledge of Factors Contributing to Job Satisfaction	54.6	48.5	2.57	0.005
Common Threads in Jobs	65.7	59.8	2.12	0.01
Economic Awareness	58.2	52.6	2.24	0.01
Decision Making	61.5	54.7	2.67	0.005
Appreciation and Attitudes	60.2	54.9	2.01	0.020
Knowledge of Career Clusters Score	49.9	44.8	2.28	0.01

found to be significant on at least the .05 level on *all* measures at both the elementary/intermediate and secondary levels.

Career Decision-Making

Hoyt (1974) offers the following framework for career education:

> As a process, career education follows the model of career development. This model envisions a sequence involving, in a

progressive manner, (a) career awareness, (b) career exploration, (c) career motivation, (d) career decision-making, (e) career preparation, (f) career entry, and (g) career maintenance and progression.

Career decision-making, as further defined by Hoyt, is described as the process which assists the individual to answer three questions: (1) What is important to me? (2) What is possible for me? and (3) What is probable for me?

Wise, Charner and Randour (1975) identify two processes which they consider integral to effective decision-making:

> **Identifying opportunity**–the process of perceiving and structuring career options.
>
> **Assessing opportunity**–the process of identifying the benefits and costs associated with each in a set of options.

The decision-making process, according to the authors

> . . .can be activated at any point in an individual's career and as society becomes more complex and as the marketplace creates new occupations and discards old ones, situations of choice will appear more frequently.

To serve as a referrent for the remainder of this section, the following definition of career decision-mal ng provided by Masucci (1975) will be used:

> . . .the process of identifying or assessing opportunity and as actual choices such as (1) entering a specific job or career, (2) increasing one's level of aspiration, and (3) choosing a specific occupational or educational preparation program.

Several studies, some of which were previously mentioned in the career awareness literature, also provided additional information on career decision-making. Because career decision-making has been previously identified and defined as that step in the process which occurs after the student has engaged in career awareness, exploration, and motivation (Hoyt, 1974), *or* as a repetitive step which occurs, at the minimum, only after the student has secured substantial occupational information (Wise, Charner and Randour, 1975), this monograph will only review those studies which involve an evaluation of the effectiveness of career education on career decision-making beyond the elementary level.

The impact of a career education media center upon junior high students' decision-making skills was investigated in the Pima, Arizona evaluation of career education (Pima County Developmental Career Guidance Project, 1975). The

media center, staffed by a career education specialist, was available to all junior high students on a non-restricted basis. Results included in the evaluation report indicate that 65 percent of students in grades 7, 8, and 9 reported that the career media center assisted them in making a career choice; students in grade 9 utilized the services of the center more than students in grades 7 and 8. A t-test was used to test the significance of the difference between the decision-making skills of two groups of students (those having high exposure to career education and those having low exposure to career education). Students in the high exposure group exhibited a much greater ability to recognize and demonstrate the decision-making skills associated with various occupational roles and were better able to recognize the degree of responsibility inherent in different jobs. The differences between the performance of the two groups on these two criteria were significant.

The Cochise County Career Education Project (Behavioral Research Associates, 1975) provides additional information on the effectiveness of career education in the decision-making area. Two groups participated in the Cochise County evaluation effort: one, a sample which had high exposure to the career education project; the second, a low exposure sample. Table 3 of this report provides summary data for the Arizona evaluation effort. In both instances, the results were significant at greater than the .01 level. The high exposure sample at both the elementary/intermediate and the secondary levels exhibited greater decision-making skills than the low exposure sample.

Jacobson (1975) conducted a survey of the effectiveness of career centers in the State of California. His report indicates that as students increase the frequency of their visitations to career centers, their achievement of objectives related to decision-making increases. Jacobson suggests that improved curriculums in the decision-making area of career education and improved staff training would further assist the achievement of decision-making objectives.

Wellman (1974) conducted an evaluation of career education projects in Crisp and Liberty Counties in the State of Georgia. Included as an objective of the two-county project was a criterion relating to the ability of students to apply the decision-making process to a series of decisions and commitments in the development of a career plan. The process for evaluating the criterion was stated as follows:

> The pupil will be able to defend his cluster selections with facts about himself, the cluster chosen, and his reason for his belief in the careers available in the cluster. The pupil will submit a plan to the teacher or counselor outlining his desired lifestyle, and how he plans to reach this goal.

The goal, according to the Wellman report, was judged to have been fully achieved in grade 11 in Crisp County and in grade 12 in both Crisp and Liberty

Counties. Instrumentation utilized in determining the achievement of the students included use of both a Survey of Education and Career Plans and the Career Maturity Inventory.

The Nevada Department of Education provided information related to career decision-making in its report, *(An Objective-Based Career Guidance Program* 1975). Included in the program was the provision of a profile of computer-available information for each student. Students, in their profile, were provided with information relating to their grades, test scores, and career and educational aspirations. Guidance personnel assisted students with an interpretation of the profile. T-ratios, significant at the .05 level, indicate that on the basis of a self-report students who received profiles felt better prepared to make career decisions than students who did not.

The Pleasantville Public Schools in New Jersey explored yet another facet of career decision-making (*Summer Coupled Work/Study Evaluation Results,* 1975). Forty students in grades 10 and 11 were provided summer employment in various community agencies for a six-week period. Utilizing a pre-test/post-test design, project evaluators administered the Career Maturity Inventory to all 40 project participants. Data indicates that students who participated in the summer project exhibited percentile gains on five sub-test scores: Knowing Yourself, Knowing About Jobs, Choosing a Job, Looking Ahead, and What Should They Do?

Academic Achievement

Concern over the skills and attitudes acquired by students as a result of their participation in educational programs is of long standing. As early as 1918, the Commission for the Reorganization of Secondary Education addressed this concern through the espousal of seven cardinal principles of education which were translatable into school objectives or goals. In later years, the goals of educational programs and institutions were addressed by others who were concerned with the general topic of student achievement. Central to the theme of current discussions is the concern over the direct or indirect acquisition of skills by students enrolled in various programs.

Bryant (1975) establishes the relationship between career education and academic achievement:

> . . students need to acquire the necessary academic skills and attitudes about work, leisure, and education so that they can adapt to change, can be skilled in certain career areas that best suit their abilities and interests, and can be mentally acceptant of furthering their education and retraining for jobs throughout life.

For the most part, studies examining have been conducted only since the mid-1970's. Those studies which provide information relating to either academic achievement or basic skills are presented here. The potential influence of career

education upon academic achievement was investigated in the evaluation conducted by the Ceres Unified School District, California (1975). Approximately 2,000 elementary students participated in a three-year career education program initiated by that district. Comparisons were made on the percentage of students who scored at or above grade levels in the content areas of mathematics and reading. Data indicate that a greater percentage of students exposed to the career education program scored at or above grade levels in grades 1, 3, 4, 5, and 6 in 1974 than did comparable students in 1973 in the content area of mathematics; and that a greater percentage of those students who participated scored at or above grade level in all elementary grades in the content area of reading.

In 1975, Prince George's County (Maryland) Public Schools investigated the effects of integrating a career education program into the existing instructional program of selected schools. A primary focus of the research effort was an analysis of the effects of career education in the area of basic skills. Fourteen schools participated in the study, and individual classes were combined across schools and within grade levels to form the experimental and control groups. Findings indicate that the experimental group—those receiving career education—scored significantly higher than did the control group in reading and arithmetic.

Olson (1974) reports on the effectiveness of the career education model implemented in the schools of Lincoln County, West Virginia. The three-year program, initiated in 1971, involved grades 1 through 6 in eight elementary schools. Of the student population, 887 students participated in the career education program; 1,549 students did not. The program included field trips, role models, simulation and multi-media activities, and instructional resource units. An analysis of covariance was used to provide an unbiased comparison of the effects of the treatment upon 415 randomly selected students. In the area of language achievement, the adjusted post-test mean of the experimental group was 11 percent higher than the adjusted post-test mean of the control group. In mathematics achievement, the adjusted post-test mean of the experimental group was 24.5 percent higher than that of the control group. The difference between the means of the two groups in mathematics was significant at the .01 level.

Twenty elementary, middle and secondary schools participated in a career-based curriculum project initiated in South Carolina by the Union County Schools (Union County Board of Education, 1975). Teachers in participating schools were provided with information relating to the development and infusion of career units into academic disciplines; and a career information center and group guidance procedures were established. Students in grades 3, 6 and 7 were randomly selected to form the experimental and control groups. Equivalency of the two groups was established via a comparison of mean grade equivalents in reading and mathematics. Differences in the achievement of the two groups of students were tested. Results of the one-way analysis of variance indicate that, at the grade 3 level, the differences between the experimental and

control groups in reading and mathematics were not significant. At the grade 6 level, the difference between the two groups in reading was statistically significant with the experimental group scoring higher.

Bryant (1975) examined the achievement scores of 348 elementary students in randomly selected schools in a ten-county area in North Central Texas. Matched samples of classes of students at the grade 5 level were selected for the experimental and control groups. Teachers of the experimental classes were trained in the use of career-education curriculum guides in language arts and social studies and consultant assistance was provided to teachers on a request basis. Results of pre-test/post-test design found statistically significant differences between the experimental and control groups on the Comprehensive Test of Basic Skills in the areas of total achievement battery, Reading Test, Language Test, Study Skills Test and Vocabulary, Language Expression and Reference Skills subtests. All differences favored the experimental group. Career education concepts were not infused into the arithmetic curriculum, and no greater gain was made in arithmetic by the experimental group than by the control group.

An extensive evaluation process was conducted by Spengler (1975) of the District One, New York, BOCES career education program. Teachers, counselors, administrators and media specialists developed curriculum materials which infused the career education concept into the normal academic curriculum. Fifty-two Learning Activity packets, including 900 Learning Activity sheets, were prepared, evaluated, revised and used in the classroom by 300 teachers. An examination of pre- and post-testing for the first year indicated slight gains in 28 of the 64 cells (subject x grade) examined, and statistically significant gains in two cells. In the second year the same test revealed achievement gains by the experimental group in 59 of the 64 cells; in 16 cells, the gains were significant.

The Elkhart Career Center (1975) studied the effect of career education on the language and reading skills of students identified as reading four or more years below grade level. Some of the special activities the students took part in were the use of special workshops for one period a day, and field trips to businesses and industries in the community. The students' scores indicated that growth gains in language and reading skills ranged from .6 to 3.3 years; the mean gain was 1.5 years.

The McKeesport Area School District (Educational Research and Development Associates, 1974) examined the effects of career education upon the academic achievement of elementary students both in the academically talented program and the regular classroom. Analysis of pre-test/post-test data revealed that students in the gifted program made substantial gains in 15 of the 18 career units studied, while the regular classes made significant gains in only 3 of 11 units tested.

High school students from the Philadelphia School District participated in an experience-based career education program developed and administered by Research for Better Schools, Inc. (1974). The four-year program included three types of activities: hands-on activities conducted at work sites in participating

industries, businesses, agencies and unions; structured small-group guidance sessions: and individualized learning activities in communication skills and mathematics. All students participating in the program took part in a pre-test/post-test series of instruments, including the Comprehensive Test of Basic Skills. The experimental group demonstrated greater significant growth in reading and mathematics than the control group.

The Northwest Regional Educational Laboratory in Portland, Oregon (1974) reviewed the effects of another experience-based career education program in the areas of reading and math. Using subtests of the Comprehensive Test of Basic Skills (CTBS) for pre-test/post-test instrumentation, a statistically significant gain in reading was shown by students in the experimental group and not by those in the control group. In mathematics the experimental group partook in individual study, individual tutoring and the application of math skills in practical situations. In the end, the experience-based career education students scored a mean grade equivalent gain of .7 years, while the comparison group scored a mean grade equivalent gain of only .1 years.

Wasdyke (1975) explored the effects of career education on students in grade 3 in the Newark School District. The experimental group (those grade 3 students receiving career education) was provided six weeks of formal instruction; the control group received no formal instruction in career education. An analysis of the differences of the mean gain scores of students on a pre-test/post-test comparison indicates that differences in the gain scores were statistically significant at the .01 level with the difference favoring the experimental group.

Bagley (1975) conducted an evaluation designed to determine whether a teacher's effectiveness in the classroom improved as a result of participation in an in-service program focusing upon a career education approach to instruction. Improvements in teacher effectiveness were assessed via the academic growth of students throughout the school year. The Science Research Associates (SRA) Achievement Series Form F was administered to all students in grades 6 and 7 and scores on the total reading, total mathematics, and use of information scales were examined. Difference scores, computed as a student's seventh grade growth score minus his/her sixth grade growth score, were analyzed. Mean differences between the experimental group (whose teachers participated in the workshop) and the control group were not found to be statistically different on the total mathematics and use of information scales tests; however, the difference between the two groups on the total reading scores was significant at the .025 level.

Other Ways of Assessing Effectiveness

To effect educational change, the input, acceptance and commitment of various people are required. Probably the most influential of all the actors on the education stage is the teacher—the person who makes change possible and provides the vehicle whereby change is implemented. Teacher opinion data is,

therefore, quite useful in an evaluation study and an attempt will be made to summarize various survey reports on the attitudes of teachers, as well as students and volunteers toward career education.

An evaluation of an early career education project conducted in Pennsylvania by Seidel, Peters & Higgins (1973) examined a number of components concerning the implementation of the Temporarily Individualized Modular Education Scheduling concept (TIMES) in a vocational setting. Aspects of the TIMES concept include the identification of skills required for various occupations; the development of these skills via the use of tasks, modules, and units; and the management of this system utilizing computer facilities. It aims to provide students with avenues for the planning of careers, the preparing for job entry into the labor market, and the restructuring of traditional teaching/learning environments.

The faculty expressed a positive attitude toward TIMES and viewed their in-service training as "good" to "very good." School administrators expressed support for the project, and parents were so impressed that they began an adult evening school whereby they, too, could make use of the TIMES system.

The attitudes of ten percent of the student population were assessed to obtain data on the system's effectiveness. These data indicated that the students were positive about TIMES; they understood it, preferred it to the traditional method of education they have experienced, and viewed this approach as an aid to career planning.

Herzog (1974) reports the results of a survey of ninth and eleventh graders in South Dakota to provide data for assisting counselors in the development of a comprehensive career counseling and guidance program. About half of the high schools in the State were asked to complete the needs assessment survey. Students in both grades ranked their highest needs in the following order:

1. relevant course selection
2. course interest
3. career preparation
4. on-the-job experience
5. employment outlook awareness
6. knowledge of course relevance to future plans
7. job interview information
8. knowledge of various educational opportunities
9. local available employment
10. goal setting information

The results indicate a clear need for a comprehensive career education program in South Dakota.

Perönne (1974) reports the results of an evaluation of the programmatic effects of a Racine, Wisconsin career development program in grades 7 through 9. Teachers used the *Career Development Guide*—a compilation of suggested activities and audio-visual techniques and material—as a part of the regular

curriculum. The Readiness for Career Planning (RCP) scale was used to measure the amount of career maturation –readiness for career planning–which occurred as a result of the two-year program. A fifty-item multiple choice instrument, similar to the Wisconsin Career Awareness Inventory, was used to measure knowledge of careers.

Results showed that there are no differences between the males and females in the sample on readiness for career planning. When knowledge of careers was examined, results showed that high achievers had a greater knowledge of more careers, although some variation did exist within achievement levels.

Another analysis indicated that students lacked knowledge of education requirements associated with various careers, particularly those which require a baccalaureate degree. However, they did understand job titles which describe the work duties or the product.

Students experienced difficulty in responding to items which stressed worker traits; and the more glamorous or popular jobs were educationally over-rated by students, that is, more training than is usually required was ascribed to these jobs by student respondents.

Arterbury (1974) reports the results of a survey designed to determine the attitudes of K-12 educators toward the definition of career education, the extent to which they are committed to career education, and the methodologies and procedures which they perceive to be appropriate for implementation of the career education concept. A total of 2883 survey forms were mailed to educators in the participating schools. The number of completed forms which were returned was 1,402, slightly less than a 50 percent respondent rate.

Results of this survey indicate that the basic concepts/assumptions of career education were accepted as being important by approximately 90 percent of the responding educators. Approximately 45 percent of the total sample feel that students recognize the relevance of the career education concepts presented. Most of the educators viewed their school's program as being less than adequate in terms of career development. In the area of commitment to career education, approximately 85 percent of the respondents viewed career education as beneficial to their students; and 82 percent indicated they would work to make career education succeed in their schools. When questioned about teacher responsibilities seven of the eight tasks identified were accepted by 95 percent of the respondents. Teachers felt the eighth task–to reinforce career development objectives through individual and group counseling–was the responsibility of the counselors. When asked to select from a series of statements describing the most effective methods for assuring use of career education objectives in the classroom, educators chose in-service personnel development and the use of appropriate curriculum materials. Teachers identified community resource guides and help with the infusion process as the two areas in career education implementation where the most help is needed.

Faulkner (1975) surveyed every teacher in all public schools in the State of Vermont. He asked two questions: the first concerned the current level of career education activities; the second, an indication of the type of career

education assistance they desired. A total of 4,641 teachers responded to the survey, and results indicate that approximately 73 percent were familiar with career education concepts and made use of them in the classroom at varying degrees. Seventy percent of the school administrators indicated they were familiar with career education concepts.

Fifty-eight percent of the teachers answered the second question affirmatively and requested some type of assistance. The largest percentage (26 percent) requested general information; 10 percent asked for workshop training; and 3 percent requested bibliographic and research materials.

A total of 40 percent of the administrators requested assistance—general information was requested by 17 percent; 7 percent requested bibliographic and research materials; and 6 percent of the administrators requested workshop activities. Of specific interest was the fact that 59 percent of the responding administrators either did not want any information or did not complete the form.

The results of a district-wide survey conducted by Shipman (1976) indicate that the Chittenden Central School District in Vermont needs more career education. Data collected from 942 students (93 percent of the students in grades 5 through 8 in the district) indicate that 92 percent thought about future work, with 87 percent giving specific job titles of the work they thought they would like. Specific questions concerning their future job revealed that 59 percent were realistic concerning the amount of education required, while only 17 percent were knowledgeable concerning income data. The students were evenly divided on whether they learned more about jobs from the people in their homes or from television. Responses to where they secured information about jobs within the school varied. On a district-wide basis, the content areas of English, Language Arts, Reading and Social Studies were cited most often; fewer students cited Industrial Arts, Home Economics and the Learning Center as sources of job information.

A teacher survey indicated that 50 percent of the middle school level teachers feel that the school is not doing enough for career education, while 8 percent said they were opposed to integrating career education into the curriculum in grades K-12.

Calhoun (1975) reports the results of a program designed to relate a student's academic experience to the world beyond the classroom via service as volunteers and aides in a variety of human service agencies. The Human Services Program had several goals: to provide the student with an opportunity to share something of him/herself, to relate the linkage between course content and the world of work, to learn more about him/herself, to develop coping attitudes and skills, and to develop and refine career goals. The survey forms were completed by 57 of the 87 students who completed the program. Fifty-six of the students (98 percent) felt the experience was of benefit to them, with 83 percent indicating that the program aided them in making a career choice. Ninety percent of those who decided to attend college stated that the volunteer service helped them determine what area they wanted to pursue in college.

Cox (1976) collected and summarized teacher-opinion data concerning a career education program for gifted and talented students. The project used the services of both special and regular classroom teachers. Results of the survey indicated that most teachers highly favored the project activities. Teachers who were actively involved seemed to report greater benefits in the program when a total-staff approach was in effect. Schools which used the special-teacher approach reported more negative comments, particularly from parents of non-participating students. Fifty-five percent of the parents of participating students reacted positively to the program. Little criticism was noted when teachers were asked whether they considered the project activities to be an imposition or interruption to the total school program.

Tackley (1976) reports the results of a needs assessment instrument designed to assess the skills required by students in job seeking. Data indicate that about 21 percent of the seniors included in the survey did not have any paid work experience, and that only 1 percent of the students had ever done any volunteer work. When the various methods of contacting employers were presented to students, it was found that over 60 percent had not used letters of application, résumés or telephone solicitations; 40 percent had not visited an employer's office or completed an application form. In general, more than 50 percent of the students reported that they felt ill at ease in using these methods and expressed a need for formal instruction in these areas. Only 16 percent of the students had ever taken part in role playing, perhaps the most effective simulation experience for learning job-seeking skills. Students, in general, appear to be aware of the personal characteristics or work habits which are commonly expected by employers. However, they tend to underrate the importance of communication and numerical skills.

Students were also asked how many years they expected to participate in the work force. When the results were compared to current statistics regarding the mean number of work years for women, the survey findings indicated that females tended to underestimate the number of years they would work.

Summary

This partial review of the available research has attempted to provide the reader with the results or findings of various evaluations conducted in the area of career education. The studies cited were diverse in both focus and methodology, and few attempted to address exclusively the measurement of the effects of career education on the major topical areas of career awareness, career decision-making, and academic achievement. Rather, the projects had as their original intention the assessment of the overall effects of a local career education effort, some of which may have had objectives related to the mentioned areas. In addition, the review contained in this monograph is limited and cannot be considered as exhaustive of the literature relating to the evaluation of career education efforts.

Studies related to the effectiveness of career education in the area of career awareness were more numerous than those which focused, either in part or whole, upon other effects. This career awareness emphasis appears reasonable when one considers that the majority of projects in local school districts focused upon career education at the primary levels where career awareness is most often stressed. However, several studies did report findings on the effect of career education upon the career awareness of older students. In general, students who participated in career education projects achieved gains in occupational information, attitudes toward work, career maturity, knowledge of the world of work, and reality about their career planning. Findings relating to the effects of career education upon career decision-making were similarly positive: students who had participated in career education projects at both the elementary and secondary levels were better able to make decisions which required analyses of their abilities, needs and interests; of occupational roles; and the relationship of self to career plans.

Perhaps the most encouraging findings were reported in those aspects of the evaluations which focussed upon basic academic skill development. Where the career education concept is infused into existing curriculums, it appears that this infusion process positively relates to academic growth.

Overall, the evaluation efforts to date display positive results in the many and varied aspects of career education. A number of evaluation studies are currently being conducted and it is hoped that the addition of the results of these studies to the existing evaluation literature will corroborate the findings of the initial inquiries summarized in this monograph.

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